Combining Spinless Photon Magnetometers with Magnetic Footprint Amplification of Received Light for Revolutionary Divergent Moment Photonic Sensors (DMPS)

11 April 2024
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Introduction

Building upon two discrete concepts of my own authorship which naturally complement one another; the Spinless Photon Magnetometer and the Magnetic Footprint Amplification System, a new opto-electronic sensor mechanism further improved relative to the publication of 26 November 2023 is possible.

Abstract

The concept of using photons to measure other photons has been dismissed by the optics community for reason of the extremely weak interaction between photons, particularly over short distances.

As was explored in 26 November 2023, it may be possible to use photons to measure the properties of other photons by increasing the discrete magnetic footprint of the photons being detected. Such a system would also, necessarily, mean taking CMOS or CMOS-like sensors out of the equation and such a system would, instead, rely upon the measurement of the strike position of the individual control photons using positional sensors designed to detect the strike position and timing of individual photons used for this indirect measurement. Another advantage of this system, aside from massively improved light sensitivity and resolution, would be the elimination of sensor noise.

In terms of the direct measurement of electromagnetic waves, measuring a single photon (as difficult as this is) does not provide the needed information to extrapolate information concerning the frequency of light. The creative measurement of three points along any EM wave can be used, as I explained in previous publications, to extrapolate frequency; a method which is extremely promising for improving radio receivers for high-bandwidth and noise-reducing applications for data transmission.

By contrast, however, in this novel light-sensing paradigm, the object is to maximize the magnetic influence of incoming light (the light being measured) insofar as is possible while mitigating, insofar as is possible, the discrete magnetism of the control photons. The magnetometer concept of 17 December 2023 lends itself to this purpose. While photons would naturally have very little influence upon one another mid-flight, this is only due to their matched magnetic moments. If we were to use artificial means to *increase* the magnetic moment of the detected photons and to *decrease* the magnetic moment of the photons being used to make the indirect measurement of the measured photons' magnetic

moment (which is necessarily correlative with its frequency) then the concept of using photons to measure other photons would become feasible. This type of opto-electronic sensor may be termed a Divergent Moment Photonic Sensor (DMPS.)

If a spinless photon is used as the control photon; as opposed to a standard photon as suggested previously; its trajectory would be altered more significantly than that of a standard photon. In this detection regime, control photons are projected transversely in close proximity to a mirror which reflects photons prior to the eventual ejection of the received photons from the mechanism. If magnetic moment is amplified during optical reflection events as predicted, the passage of a spinless photon near to the photon to be measured during the instant (~two attosecond window) in which optical reflection occurs should enable that spinless control photon to experience a predictable and measurable course deviation which could be measured by a single-photon detection mechanism situated along the sides of the lens mechanism, rather than at the rear as in traditional opto-electronic camera designs.

It would be necessary for the mechanism to feature extreme precision in the timing and angular momentum of projected control photons and to ensure that control photons are not redundantly influenced by interaction with other detected light. It would be essential that the control photons be influenced only a single time by the detected photons in a single node and also essential that course deviations be sufficient in magnitude to enable the extrapolation of the frequency value of the detected light. Each node, therefore, would have its own control photon emission mechanism.

The previously published Optical Pulley System of 27 January 2024 would seem to be a natural fit for amplifying further the course deviation of the control photons. This may be usefully achieved by shunting the control photons (after interaction with the moment-amplified waves) using precision 45-degree mirrors to adjacent track situated behind the double-reflection mechanism. After two turns at right angles, the control photons would then make a passage through a glass nanosphere with perfect optical qualities calibrated so that a control photon not altered in its course would pass through the exact center of the sphere and would, under that circumstance, experience no alteration to trajectory. Any course deviation introduced by the magnetic moment of the measured light would be further amplified by the nanospheres, enabling the photon to be, ultimately, sufficiently altered in its trajectory prior to reaching the positional strike sensor at the periphery of the lens in order for varying frequencies to be distinguished according to *where* the control photon strikes the detector.

Knowledge of which photon strikes correlate to which virtual sensor nodes can be achieved by firing these photons at offset timings unique to each node, not unlike the timing of the cylinders in an internal combustion engine. A precision clock would be able to sort out, according to timing analysis, which area is being described according to *when* the photon is received and the frequency of the

measured light would be encoded in the *where* of the photon strike. As this positional strike sensor would not be of the sort which involves the passage of current through the detector as does CCD and CMOS, sensor noise would not be a factor, particularly when this detector can be architecturally shielded from all EM sources other than the control photons.

Conclusion

Such a sensor design represents the most efficient and most evolved possible optical sensor allowable by physics and its construction is technically feasible using available materials and fabrication methods. This recommends the concept for immediate exploration and prototyping.